(b) an elongate optical fiber extending longitudinally along said body and extending beyond said tip; and

(c) said probe body defining a first terminal portion proximate said tip having a first cross sectional area immediately surrounding said optical fiber, a second terminal portion proximate the opposing end of said probe body from said tip having a second cross sectional area immediately surrounding said optical fiber, and an intermediate portion located generally half way between said first terminal portion and said second terminal portion having a third cross sectional area immediately surrounding said optical fiber, wherein said first cross sectional area is less than said second cross sectional area, and said third cross sectional area is less than said second cross sectional area.

C1

19(amended once). A fiber optic probe comprising:

(a) a probe body having a tip for selectively approaching a device under test;

(b) an elongate optical fiber extending longitudinally along said body and extending beyond said tip; and

(c) said probe body proximate said tip including an inner material closely surrounding said elongate optical fiber, said probe body proximate said tip including another layer surrounding said inner material, wherein said inner layer of material has a greater tendency to maintain its cross sectional area while being flexed up to approximately 90°than said another layer while being flexed, when said another layer is free from said inner layer of material, wherein said optical fiber is movable with respect to said inner layer when engaging said optical fiber with said probe body.

C2

28(amended once). A fiber optic probe comprising:

(a) a probe body having a tip for selectively approaching a device under test;

C3

(b) an elongate optical fiber extending longitudinally along said body and extending beyond said tip; and

(c) said elongate optical fiber longitudinally adjustable with respect to said body such that the length of said optical fiber extending beyond said tip is extendable without removing said optical fiber from said probe body.

37(amended once). A fiber optic probe comprising:

C4

(a) a probe body having a tip for selectively approaching a device under test;

(b) an elongate optical fiber extending longitudinally along said body and extending beyond said tip; and

(c) said fiber optic probe including a support supporting a major portion of the circumference of said optical fiber for selectively maintaining said optical fiber from freely moving longitudinally with respect to said probe body.

46(amended once). A fiber optic probe comprising:

C5

(a) a probe body having a tip for selectively approaching a device under test;

(b) an elongate optical fiber extending longitudinally along said body and extending beyond said tip; and

(c) a substantial portion of said probe body being readily bendable to adjust the angle of said probe tip with respect to the probe body and said optical fiber slidably engageable with said substantial portion of said probe body.

**REMARKS**

The Examiner objected to the drawings. A proposed corrected drawing is enclosed herewith. The corrected drawing is also being forwarded under separate cover to the official draftsman.

The Examiner rejected claims 1, 2, 4, 5, 7-11, 13, 14, 16-18, 28-30, 32, 35-39, 41, 43-35, 59-61, 63, 64, 66-70, 72, 73, 75, and 76 under 35 Section 102(b) as being anticipated by Rumbaugh, U.S. Patent No. 5,101,453.

Rumbaugh discloses a fiber optic wafer probe 10 that includes a probe body along which an optical fiber 16 extends to protrude from the tip of the probe body. The probe body loosely guides the optical fiber 16 so that at least a significant portion of the length of the optical fiber is movable longitudinally with respect to the tip 12 and probe body 10. The purpose of the movability of the optical fiber is to enable the optical fiber to buckle longitudinally in response to longitudinal over-travel of the fiber 16 toward the test device. After repeated use, the optical fiber is replaced by a new optical fiber and connector. Unfortunately, replacement of the optical fiber insert is both expensive and time consuming. Further, the angle of incidence provided by the optical probe may be unsuitable for a particular probe station or probing requirements. Moreover, the bulky nature of the optical probe make it unsuitable for environments with limited available space.

More specifically, Rumbaugh teach that the fiber is guided loosely by the channel toward the probe tip 12. The cover 22 has a pair of sides 24, 26 (see FIG. 4) which are hingedly pivoted to a narrowed position 10a of the probe body by a pin 28. The tops of the two sides 24, 26 are connected together by a structural crosspiece (see FIGS. 5 and 6) atop which is a thinner hood member 42. At the top 12, the hood member 32 has a v-shaped depression 34 which loosely centers the optical fiber 15 in the center of the channel. See column 2, lines 38-63. The loose guidance of the optical fiber 16 by the combination of the channel 20 and the hinged cover 22 holds the optical fiber in proper position on the probe body 10 while nevertheless permitting the fiber 16 to move longitudinally with respect to the tip 12 and, throughout a significant portion of the fiber's length, with respect to the probe body 10. See column 3, lines 7-13. Accordingly, during probing the over-travel of the end 16a of the fiber 16 reduces the likelihood

of excessive contact force by longitudinal retraction of the fiber 16 as illustrated in FIG. 5. See, column 3, lines 13-27.

Claim 1 patentably distinguishes over Rumbaugh by claiming that the probe body being sized such that at least a major portion of the elongate optical fiber is maintained free from freely moving with respect to the probe body.

As previously described, Rumbaugh fails to suggest that a major portion of the optical fiber (i.e. greater than 50%) is maintained in such a manner. In fact, Rumbaugh teaches away from the probe body being sized such that at least a major portion of the elongate optical fiber is maintained free from freely moving with respect to the probe body.

Claims 2-9 and 77 depend from claim 1, either directly or indirectly, and are patentable for the same reasons asserted for claim 1.

Rumbaugh discloses a channel 20 having a width and depth that are significantly greater than the diameter of the optical fiber 15, such that the fiber is guided loosely by the channel toward the probe tip 12. See column 2, lines 38-43. The channel 20 which immediately surrounds the optical fiber has the same size proximate the tip, proximate the opposing end, and generally half way between.

Apparently the Examiner interpreted the "portions" of claim 10 to relate to the cross sectional area of the probe as a whole at the claimed positions.

Claim 10 has been amended to patentably distinguish over Rumbaugh by claiming that the probe body defining a first terminal portion proximate the tip having a first cross sectional area immediately surrounding the optical fiber, a second terminal portion proximate the opposing end of the probe body from the tip having a second cross sectional area immediately surrounding the optical fiber, and an intermediate portion located generally half way between the first terminal portion and the second terminal portion having a third cross sectional area immediately surrounding the optical fiber, wherein the first cross sectional area is less than the second cross sectional area, and said third cross sectional area is less than the second cross sectional area.

$X_1 < X_2$

$X_3 < X_2$

Claims 11-18 and 78 depend from claim 10, either directly or indirectly, and are patentable for the same reasons asserted for claim 10.

The Examiner rejected claims 19-27 under 35 U.S.C. Section 103(a) as being unpatentable over Rumbaugh in view of Yarush, et al. U.S. Patent No. 5,879,289.

The Examiner notes that Rumbaugh fails to disclose the probe body proximate the tip including an inner material closely surrounding the elongate optical fiber, the probe body proximate the tip including another layer surrounding the inner material, wherein the inner layer of material has a greater tendency to maintain its cross sectional area while being flexed up to approximately 90°than the another layer while being flexed, when the another layer is free from the inner layer of material.

The Examiner suggests that Yarush, et al. teach a probe body (FIG. 12h, 322) proximate the probe tip (330) including an inner material closely surrounding the elongate optical fiber 326. The Examiner suggests that the optical cable 326 inherently has an optical fiber with a material closely surrounding it. Accordingly, under the Examiner's interpretation the optical fiber and material closely surrounding it are an integral unit wherein the optical fiber and material closely surrounding it are clearly not movable with respect to one another.

While the applicant respectfully suggests that there would be no motivation to modify the structure of Rumbaugh to include an inner material closely surrounding the optical fiber, claim 19 has been amended to patentably distinguishes over Rumbaugh in view of Yarush et al. by claiming that the optical fiber is movable with respect to the inner layer when engaging the optical fiber with the probe body.

Claims 20-27 and 79 depend from claim 19, either directly or indirectly, and are patentable for the same reasons asserted for claim 19.

The Examiner rejected claim 28 under 35 U.S.C. Section 102(a) as being anticipated by Rumbaugh. The Examiner suggests that Rumbaugh teach that the elongate optical fiber is longitudinally adjustable with respect to the body. The longitudinal adjustment taught by Rumbaugh is a result of bending a fixed length of optical fiber when testing the device under test with the probe. In addition, to extend the length of the optical fiber Rumbaugh teaches that the

combination of an optical fiber and the connector are removed from the probe and replaced with a different one.

Claim 28 has been amended to patentably distinguish over Rumbaugh by claiming that the elongate optical fiber is longitudinally adjustable with respect to the body such that the length of the optical fiber extending beyond the tip is extendable without removing the optical fiber from the probe body.

Claims 29-36 and 80 depend from claim 29, either directly or indirectly, and are patentable for the same reasons asserted for claim 29.

The Examiner rejected claim 37 under 35 U.S.C. Section 102(a) as being anticipated by Rumbaugh. The Examiner suggests that Rumbaugh et al. teach a support (22) for selectively maintaining the optical fiber from freely moving longitudinally with respect to the probe body. The support 22, at most, comes into contact with a small fraction of the circumference of the optical fiber during probing as the optical fiber is in pressing engagement.

Claim 37 has been amended to patentably distinguish over Rumbaugh by claiming a support supporting a major portion of the circumference of the optical fiber for selectively maintaining the optical fiber from freely moving longitudinally with respect to the probe body.

Claims 38-45 and 81 depend from claim 37, either directly or indirectly, and are patentable for the same reasons asserted for claim 37.

The Examiner rejected claims 46 under 35 U.S.C. Section 103(a) as being unpatentable over Rumbaugh in view of Yarush, et al.

The Examiner suggests that Yarush, et al. teach a substantial portion of the probe body being readily bendable (332) to adjust the angle of the probe tip with respect to the probe body (dotted lines in FIG. 12h). In particular, Yarush, et al. disclose that a memory plastic having accordion shaped ribs 332, such as used with memory plastic flexible drinking straws, coats the outer surface of the fiber optic cable 326. See, column 19, lines 9-13. Accordingly, the memory plastic is constructed in an integral manner thus maintaining a fixed relationship between the memory plastic and the fiber optic cable. This integral fixed relationship is

necessary because the probe of Yarush, et al. is used within the human body and any relative motion between the plastic and cable would result in the undesirable accumulation of bodily fluids there between.

Claim 46 has been amended to patentably distinguish over Rumbaugh in view of Yarush, et al. by claiming a substantial portion of the probe body being readily bendable to adjust the angle of the probe tip with respect to the probe body and the optical fiber slidably engageable with the substantial portion of the probe body.

Claims 47-54 and 82 depend from claim 46, either directly or indirectly, and are patentable for the same reasons asserted for claim 46.

The Examiner rejected claim 59 under 35 U.S.C. 102(a) as being anticipated by Rumbaugh. Rumbaugh discloses a probe having a vertical profile that substantially changes over its length as shown in FIG. 1. There is no major portion (i.e., greater than 50%) of the probe disclosed by Rumbaugh that has a substantially constant vertical profile.

Claim 59 patentably distinguishes over Rumbaugh by claiming a major portion of the probe body having a substantially constant vertical profile.

Claims 60-67 and 85 depend from claim 59, either directly or indirectly, and are patentable for the same reasons asserted for claim 59.

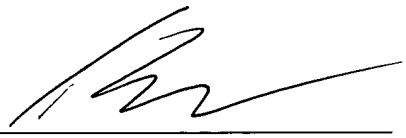
The Examiner rejected claim 68 under 35 U.S.C. 102(a) as being anticipated by Rumbaugh. The Examiner suggests that Rumbaugh discloses a probe body defining a cavity (20) therein through which the elongate fiber extends, wherein a major portion of the cavity closely surrounds the elongate optical fiber. More accurately, Rumbaugh discloses an open-topped rectangular channel 20 with a width and depth that are significantly greater than the diameter of the optical fiber 16, such that the fiber is guided loosely by the channel toward the probe tip. See, column 2, lines 35-43.

Claim 68 patentably distinguishes over Rumbaugh by claiming a probe body defining a cavity therein through which the elongate fiber extends, wherein a major portion of the cavity closely surrounds the elongate optical fiber.

Claims 69-76 and 86 depend from claim 68, either directly or indirectly, and are patentable for the same reasons asserted for claim 68.

The Examiner is respectfully requested to reconsider the claims and to pass the application to issue.

Respectfully submitted,



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## APPENDIX

Please cancel claim 87, without prejudice.

10(amended once). A fiber optic probe comprising:

(a) a probe body having a tip for selectively approaching a device under test;

(b) an elongate optical fiber extending longitudinally along said body and extending beyond said tip; and

(c) said probe body defining a first terminal portion proximate said tip having a first cross sectional area immediately surrounding said optical fiber, a second terminal portion proximate the opposing end of said probe body from said tip having a second cross sectional area immediately surrounding said optical fiber, and an intermediate portion located generally half way between said first terminal portion and said second terminal portion having a third cross sectional area immediately surrounding said optical fiber, wherein said first cross sectional area is less than said second cross sectional area, and said third cross sectional area is less than said second cross sectional area.

19(amended once). A fiber optic probe comprising:

(a) a probe body having a tip for selectively approaching a device under test;

(b) an elongate optical fiber extending longitudinally along said body and extending beyond said tip; and

(c) said probe body proximate said tip including an inner material closely surrounding said elongate optical fiber, said probe body proximate said tip including another layer surrounding said inner material, wherein said inner layer of material has a greater tendency to maintain its cross sectional area while being flexed up to approximately 90°than said another layer while being flexed, when said another layer is free from said inner layer of material, wherein said optical fiber is movable with respect to said inner layer when engaging said optical fiber with said probe body.

28(amended once). A fiber optic probe comprising:

(a) a probe body having a tip for selectively approaching a device under test;

(b) an elongate optical fiber extending longitudinally along said body and extending beyond said tip; and

(c) said elongate optical fiber longitudinally adjustable with respect to said body such that the length of said optical fiber extending beyond said tip is extendable without removing said optical fiber from said probe body.

37(amended once). A fiber optic probe comprising:

(a) a probe body having a tip for selectively approaching a device under test;

(b) an elongate optical fiber extending longitudinally along said body and extending beyond said tip; and

(c) said fiber optic probe including a support supporting a major portion of the circumference of said optical fiber for selectively maintaining said optical fiber from freely moving longitudinally with respect to said probe body.

46(amended once). A fiber optic probe comprising:

(a) a probe body having a tip for selectively approaching a device under test;

(b) an elongate optical fiber extending longitudinally along said body and extending beyond said tip; and

(c) a substantial portion of said probe body being readily bendable to adjust the angle of said probe tip with respect to the probe body and said optical fiber slidably engageable with said substantial portion of said probe body.